

- 1 1. Apparatus for aerial rearmament of aircraft, comprising:  
2 a boom, said boom being attachable to and extendible from a rearming  
3 aircraft;  
4 a weapons mount, said weapons mount being attachable to an aircraft  
5 which is to be rearmed;  
6 said weapons mount being capable of accepting a munition; and  
7 a weapons platform, said weapons platform being attached to said boom,  
8 said weapons platform being capable of positioning and orienting  
9 said munition for transfer from said boom to said weapons mount.  
10
- 1 2. Apparatus as in claim 1, further comprising:  
2 means for providing aerodynamic lift to said boom.  
3
- 1 3. Apparatus as in claim 2, further comprising:  
2 a first sensor mounted on said weapons platform; and  
3 a second sensor mounted on said weapons mount;  
4 wherein said first sensor cooperates with said second sensor so as  
5 to assist in guiding said weapons platform to said weapons mount.  
6
- 1 4. Weapons mount as in claim 1, further comprising:  
2 a plurality of hooks for engaging loops on said munition;  
3 means for simultaneously forcing open said hooks so as to disengage said  
4 plurality of hooks from said loops and release said munition; and  
5 a plunger for forcing said munition downward and away from said  
6 weapons mount immediately upon release.  
7
- 1 5. Weapons platform as in claim 1, further comprising:  
2 a movable cradle to provide said positioning and said orienting of said  
3 munition; and  
4 a plurality of calipers for holding said munition to said movable cradle.

5

1 6. Apparatus of claim 3, further comprising:

- 2 a computer and monitor;
- 3 a CCTV camera and television monitor;
- 4 a guidance unit;
- 5 an electrical power source
- 6 a hydraulic pump; and
- 7 a plurality of hydraulic control valves,

8 wherein:

- 9 said computer receives and processes data generated by said first sensor and said
- 10 second sensor;
- 11 said computer further generates and forwards instructions from said processed
- 12 data to said guidance unit;
- 13 said guidance unit actuates said plurality of hydraulic control valves so as to cause
- 14 hydraulic pressure from said hydraulic pump to effectuate positioning of
- 15 said boom; and
- 16 said CCTV camera captures an image of said positioning and said orienting of
- 17 said munition being transferred from said boom to said weapons mount
- 18 and displays said captured image on said television monitor.

19

1 7. Apparatus of claim 6, further comprising:

- 2 a first interactive computer program, comprising:
- 3 means for selecting combinations of said rearming aircraft, said
- 4 aircraft to be rearmed, and said munitions;
- 5 means for storing and accessing said selected combinations in a
- 6 database;
- 7 means for determining the quantity, availability, and compatibility
- 8 of said rearming aircraft, said aircraft to be rearmed and said
- 9 munitions; and
- 10 means for displaying said means for selecting, said means for
- 11 storing and accessing, and said means for determining.

12

1 8. Apparatus of claim 7, wherein said first interactive computer program cooperates  
2 with a centralized database.

3

1 9. Apparatus of claim 8, wherein said centralized database is selected from the  
2 group consisting of: an Air Tasking Order (ATO) and a Theater Battle  
3 Management Core System (TBMCS).

4

1 10. Apparatus of claim 8, wherein said first interactive computer program cooperates  
2 with said centralized database in real-time.

3

1 11. Apparatus of claim 6, further comprising:  
2 a second interactive computer program, comprising  
3 means for guiding the transfer of said munition from said rearming  
4 aircraft to said aircraft to be rearmed;  
5 means for determining and indicating the spatial orientation of said  
6 munition during said transfer; and  
7 means for determining and indicating the status of said transferred  
8 munition.

9

1 12. Means for guiding as in claim 11, further comprising:  
2 means for displaying the relative orientation of said first sensor to said  
3 second sensor; and  
4 means for operator to correctly position said boom based on said displayed  
5 relative orientation.

6

1 13. Means for determining and indicating the spatial orientation of said munition as in  
2 claim 11, further comprising:

3 means for determining and indicating the azimuth angle, elevation angle  
4 and yaw angle of said weapons platform; and

5 means for determining and indicating the distance between said weapons  
6 platform to said weapons mount.

7

1 14. Means for determining and indicating the status of said transferred munition as in  
2 claim 11, further comprising:

3 means for determining and indicating whether or not said munition is  
4 “docked”;

5 means for determining and indicating whether or not said munition is  
6 “hooked”; and

7 means for determining and indicating whether or not said munition is  
8 “armed”.

9

1 15. Apparatus as in claim 11, wherein said means for guiding the transfer, said means  
2 for indicating the spatial orientation, and said means for indicating the status  
3 further comprise an interactive computer display for viewing the same by an  
4 operator.

5

1 16. Means for the direct release of a munition from a rearming aircraft, comprising:  
2 a boom, said boom being attachable to and extendible from said rearming  
3 aircraft;  
4 a conveyor attached to said boom, wherein said conveyor conveys said  
5 munition from said rearming aircraft to end of said boom;  
6 means for providing aerodynamic lift to said boom; and  
7 a plurality of calipers for holding said munition to said conveyor, until  
8 said calipers are commanded to release said munition.

9

1 17. Method for aerial rearmament of aircraft, comprising the steps of:  
2 extending a boom from a rearming aircraft;  
3 affixing a munition to said boom;

4 providing aerodynamic lift and aerodynamic directional control to said  
5 boom so as to support and maneuver said boom with said affixed  
6 munition;  
7 adapting an aircraft which is to be rearmed so as to receive said munition  
8 from said boom;  
9 positioning and orienting said munition for transfer from said boom to said  
10 adapter of said aircraft to be rearmed; and  
11 captively engaging said munition onto said adapter.  
12

1 18. Method of claim 17, further comprising the steps of:  
2 a first step of sensing the position of said boom;  
3 a second step of sensing the position of said adapter; and  
4 cooperating between said first step of sensing and said second step of  
5 sensing; and so as to guide said boom to said adapter.  
6

1 19. Method of claim 18, further comprising the steps of:  
2 processing data generated by said first step of sensing and said second step  
3 of sensing;  
4 generating and forwarding instructions from said step of processing data to  
5 a guidance unit;  
6 actuating a plurality of control mechanisms so as to effectuate positioning  
7 of said boom;  
8 capturing an image of said positioning and said orienting of said munition;  
9 and  
10 displaying said image on a means for viewing by an operator.  
11

1 20. Method of claim 17, further comprising the steps of:  
2 selecting combinations of said rearming aircraft, said aircraft to be  
3 rearmed, and said munitions;  
4 storing and accessing said selected combinations in a database;

5                   determining the quantity, availability, and compatibility of said rearming  
6                   aircraft, said aircraft to be rearmed and said munitions; and  
7                   displaying said selected combinations.

8

1   21.   Method of claim 20, further comprising the step of cooperating with a centralized  
2       database.

3

1   22.   Method as in claim 18, further comprising the steps of:  
2               determining and indicating the azimuth angle, elevation angle and yaw  
3               angle of said boom; and  
4               determining and indicating the distance between said munition on said  
5               boom to said adapter on said aircraft to be rearmed.

6

1   23.   Method as in claim 18, further comprising the steps of:  
2               determining and indicating whether or not said munition is “docked”;  
3               determining and indicating whether or not said munition is “hooked”; and  
4               determining and indicating whether or not said munition is “armed”.

5